Intel® Express 9545 Router

Quick Start

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Quick Start

1 Install the Router Hardware

Important! Before you install the router, read the warnings on page 14.

1 Write down the MAC address from the label near the LAN port, for use during setup.

Connect to your LAN

2a Connect the LAN1 port to the local network or the Ethernet port of a PC, using the provided blue cable.

2b Set the HUB/PC switch to **Hub||** when connecting to a network hub or Ethernet switch, and **PC X** when connecting to a PC.

Connect to your WAN Services

3a Connect the HDSL2 port to your HDSL2 line using one of the provided red cables. This port provides HDSL2 access to a T1 service and supports Frame Relay, X.25, or a PPP leased line.

3b Connect the ISDN port to the ISDN or IDSL service using one of the provided red cables.
For an ISDN S/T-interface port, you normally do not change the **100Ω/Norm** switch setting. **Norm** is the default setting and works for most installations. See the user guide for details about this switch.

3c If you are using the Console port for a dial-up connection via a modem, connect the port to a modem using the cable provided with your modem (not the terminal cable supplied with the router).

Connect the Power

4 Connect the router to a power source (100-250 V AC) using the provided power supply and cord.

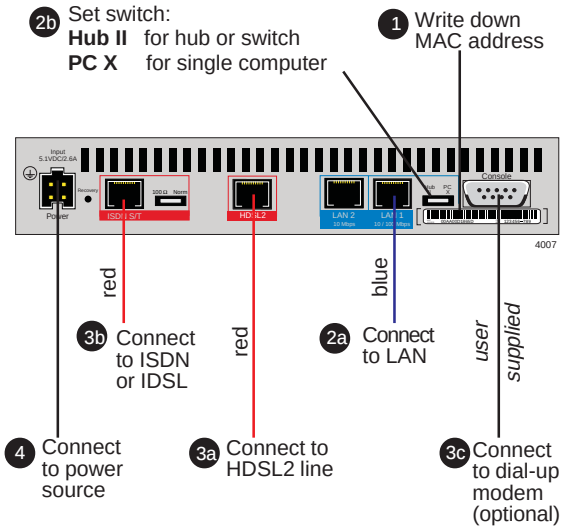
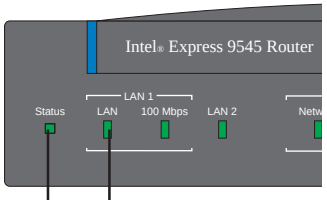


Figure 1. Connecting the Express 9545 Router. See the user guide for details on connecting the LAN2 port.



LAN LED

Green - port is operational and ready for configuration.

Orange - port is down. Check cables.

Status LED

Green blinking - router is in factory default and ready for configuration.

Red - error, router is not operational.

Figure 2. Check Status and LAN LEDs. See page 10 of this guide for a complete description of LEDs.

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2 Install Intel® Device View

Intel Device View manages and configures the router from a PC running Microsoft Windows*, or through a Web browser. We recommend using Intel Device View; however, the Local Management section in this guide describes alternate management methods.

1 Insert the Intel Device View CD-ROM in your computer's CD-ROM drive.

The Intel Device View installation screen appears. If the screen does not appear within 10 seconds, run the autoplay.exe file on the CD-ROM.

2 Select the version of Intel Device View you want to install.

- Click **Install for Windows** to use Intel Device View on only the PC where you install the software.
- Click **Install for Web** to install Intel Device View on a PC with a Web server. You can then access Intel Device View from any PC on your network using a supported browser (see Figure 4). Table 1 lists the system requirements.
- Click **Install as Plug-in** to install Intel network device support for HP OpenView*, Tivoli NetView*, or Intel LANDesk® Network Manager.

3 Follow the screen instructions to complete the installation.

Select Launch Intel Device View on the final installation screen, then continue with the instructions on the next page of this guide.

Intel® Device View (Windows)		Windows* 95, 98, or 2000 Windows NT* 4.0
Intel Device View (Web)	**Browser**	Internet Explorer* 4.0 or later
	Web Server	Windows NT* 4.0 (server or workstation) with Internet Information Server (IIS) * 3.0 or later, Peer Web Services 3.0 or later, Netscape Enterprise Web Server* 3.51
	Client OS	Windows NT Server 4.0 or Windows NT Workstation 4.0, Windows 95, 98, or 2000

Table 1. Intel Device View System Requirements.

Figure 3. Intel Device View Installation. Choose the version, then follow the screen instructions in the installation wizard.

Figure 4. Access Intel Device View for Web from any PC on the network. Start Internet Explorer and type the following in the Address field:

http://*servername*/deviceview/main.htm

where *servername* is the IP address or name of your Intel Device View Web server.

Quick Start

3 Install the Router in Intel Device View

The Device Install Wizard sets up the router for management in Intel Device View by performing basic configuration, such as assigning an IP address.

1. If it is not already running, start the Device Install Wizard by selecting Install from the Device menu (see Figure 5).
2. Click Next.
3. When the router's MAC address appears (see Figure 6), select it and click Next. The MAC address is on the label near the LAN port on the back of the router.

Note The MAC address appears only for routers with a factory default IP address (as indicated by the Status LED blinking green). If the router has already been assigned an IP address, select Manage from the Device menu and enter the router's IP address. You can also reset the router to the factory default settings (see the instructions below).

4. Assign the router's IP address (see Figure 7), then follow the Device Install Wizard screen instructions. The router's default IP address is 192.0.2.1. We recommend that you do not use the default address as your router's IP address.
5. On the **Device Install Wizard - Finish** screen, select "Configure the device," then follow the screen instructions.

To reset the router to factory defaults:

1. Press the Recovery button located on the back of the router. After a few seconds the Status LED blinks orange.
2. Press and hold the Recovery button until the LEDs begin to blink in sequence. When the Status LED blinks green, the router is set to factory default.

Figure 5. Start the Device Install Wizard. Select Install from the Device menu to start the Wizard.

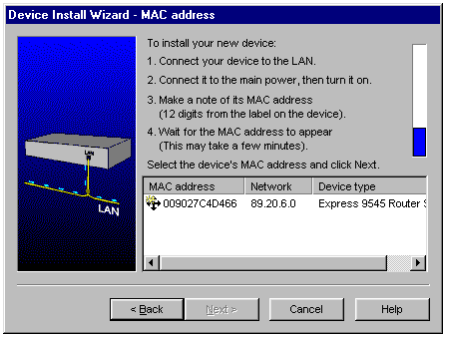

Device Install Wizard - MAC address
To install your new device:
1. Connect your device to the LAN.
2. Connect it to the main power, then turn it on.
3. Make a note of its MAC address (12 digits from the label on the device).
4. Wait for the MAC address to appear (This may take a few minutes).
Select the device's MAC address and click Next.
MAC address
Network
Device type
009027C4D466
89.20.6.0
Express 9545 Router
LAN
< Back
Next >
Cancel
Help

Figure 6. Select the MAC Address. If the router's MAC address does not appear, check the LAN connection and verify that the router is set to factory defaults, as shown by a blinking green Status LED.

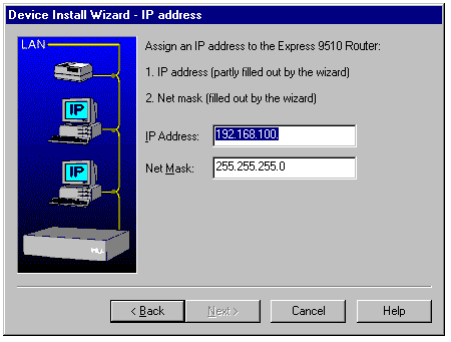


Figure 7. Assign an IP address. Type the IP address and subnet mask for the router.

Quick Start

4 Configure the Router

Intel Device View supports the Connection Setup program for configuring the router. Wizards guide you through setting up the ports, then adding connections to the ports.

Configuration Tips

- Your service subscription (the information you get from your service provider) should provide most of the information required to complete the configuration.
- You must configure a port before you can add a connection to it.

To Configure the Router

1 Complete the Configuration Worksheets on pages 6-9.

2 Select Connection Setup from the Configuration menu of Intel Device View.

3 Set up the port to which you want to add a connection.

- Double-click the port icon or select the port and click Set Up Port (see Figure 8).
- Follow the screen instructions.

4 Add remote connections to the port.

- Double-click the Add Connection icon under the port, or select the port and click Add Connection.
- Select the appropriate connection scenario for your network (see Figure 10), and follow the screen instructions.

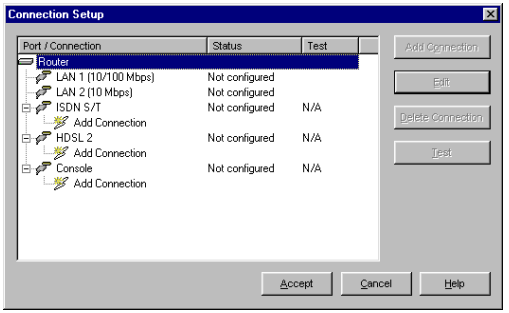


Figure 8. Connection Setup Program.

- double click to set up a port

- double click to add a connection

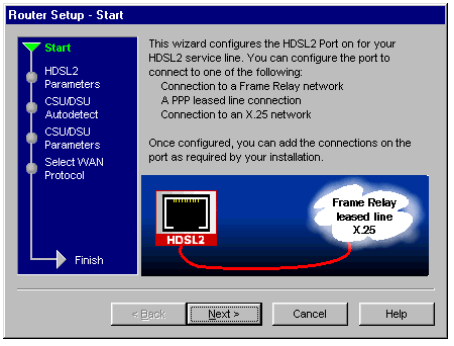

Router Setup - Start
Start
HDSL2 Parameters
CSU/DSU Autodetect
CSU/DSU Parameters
Select WAN Protocol
Finish
This wizard configures the HDSL2 Port on for your HDSL2 service line. You can configure the port to connect to one of the following:
Connection to a Frame Relay network
A PPP leased line connection
Connection to an X.25 network
Once configured, you can add the connections on the port as required by your installation.
HDSL2
Frame Relay
leased line
X.25
< Back
Next >
Cancel
Help

Figure 9. Port Setup. Complete the wizard using the information from your service provider (such as an ISP).

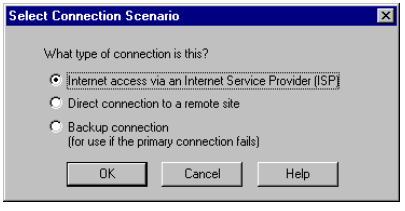


Figure 10. Add Connection. Select the connection scenario for your installation. Click help for more details on each choice.

Configuration Worksheet

These pages help you gather needed information before using a Connection Setup wizard. The information you'll need varies depending on the router model, your type of service, and the type of connection you want to establish. Consult your telephone company, ISP, and system administrator to determine which parts of this worksheet you should fill in.

Get information from your telephone company for your type of connection

For ISDN

ISDN Switch Type (check one)

Europe

❍ Euro ISDN / ETSI

Japan

❍ KDD ❍ NTT

North America

❍ National ISDN-1 ❍ National ISDN-2 ❍ AT&T 5ESS ❍ Nortel DMS-100

Australia

❍ Austel TS013 ❍ Euro ISDN / ETSI

ISDN Numbers and SPIDs for your router

Local ISDN Number 1: _____ SPID1: _____

Local ISDN Number 2: _____ SPID 2: _____

Note: *You might have one, two, or no SPIDs depending on your ISDN service type.*

ISDN Connection Type

❍ Single Channel (56 or 64 kbps)

❍ Multiple Channels (112 or 128 kbps)

❍ Always On/Dynamic ISDN (AO/DI)

Local X.25 Address: _____

Remote X.25 Address: _____

TEI (Terminal Endpoint Identifier): _____

For IDSL (ISDN Digital Subscriber Line)

General for all connection types

Service type

❍ PPP leased line ❍ Frame Relay

Line Speed (kbps)

❍ 64 ❍ 128 ❍ 144 (ISDN U ports only)

For Frame Relay connections only

LMI Type (DLCMI)

❍ Annex D ❍ Annex A ❍ LMI (Cisco) ❍ None

Connection Name *(define your own)*: _____

Local DLCI (*between 16 and 991)*: _____

Configuration Worksheet

Get information from your telephone company for your type of connection

For HDSL2

General for all connection types

Framing format

❍ ESF ❍ D4

Terminal unit

❍ remote end ❍ central end

Line Speed: _____kbps

Channel Usage

❍ Continuous ❍ Custom ❍ Alternate (Odd) ❍ Alternate (Even)

For Frame Relay connections only

LMI Type (DLCMI)

❍ Annex D ❍ Annex A ❍ LMI (Cisco) ❍ None

Connection Name: _____

Local DLCI (*between 16 and 991)*: _____

For X.25 connections only

Packet Size:

❍ 128 ❍ 256 ❍ 512 ❍ 1024

Window Size *(between 1 and 7)*: _____

❍ **Only use PVCs (Permanent Virtual Circuits)**

❍ **Use PVCs and SVCs (Switched Virtual Circuits)**

Lowest two-way channel: _____

Highest two-way channel: _____

❑ Enable Flow Control

Connection Name *(define your own)*: _____

Connection Type

❍ **PVC (Permanent Virtual Circuit)**
Logical Channel Number: _____

❍ **SVC (Switched Virtual Circuit)**
Local X.25 Address: _____
Remote X.25 Address: _____

Configuration Worksheet

Get this information from your network system administrator

General for all connection types

LAN IP Address of router

IP address: _____ Subnet mask: _____

Select one, both, or none for your network:

- ❍ Enable firewall filtering (you'll need to set up filters to allow certain traffic, such as Web, FTP, and Telnet, to pass over the network.)
- ❍ Enable router management from the Internet

For a direct connection to a remote site

ISDN numbers for remote site

Remote ISDN number: _____ Remote ISDN number 2: _____

Authentication for access to this router from the remote site (the router at the other end)

Remote user ID: _____ Remote user password:_____

Authentication for access to the remote site router from this router

Your user ID: _____ Your password: _____

Routing Protocols (choose one or more)

❍ IP ❍ IPX ❍ Bridging (for non-routing protocols)

IP Routing Type *(if using IP)*

❍ RIP-1 ❍ RIP-2 ❍ Static Route ❍ Default Route

❑ Triggered RIP-1/RIP-2

If it is a static route, enter this information for the remote network:

Network Address: _____ Subnet Mask: _____

❑ Enable router management over this connection

Bridging *(if using bridging)*

❍ Transparent ❍ Spanning Tree

IPX Routing on the WAN *(if using IPX)*

❑ IPX WAN negotiation

Routing Update Interval:

❍ Minutes: _____ ❍ 1 hour ❍ 24 hours

Configuration Worksheet

Get this information from your Internet Service Provider (ISP)

Remote ISDN Number (only if you are using ISDN to connect to your ISP)

Remote ISDN number: _____

This is the ISDN number of your service provider .

IP address assigned to you by the ISP

- ❍ No IP address (it is dynamically assigned by the ISP each time the router makes a connection)
- ❍ Single IP address: _____
- ❍ Multiple IP addresses

  If you are using multiple IP addresses, choose one:

  - ❍ Use your LAN IP address directly on the Internet as a public address.
  - ❍ Enter a different network IP address for the router:

    Network IP address: _____

    Subnet mask: _____

Your WAN connection IP address is:

- ❍ Unnumbered (most common)
- ❍ Numbered

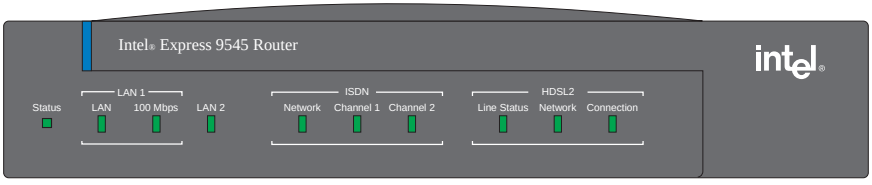
  If numbered, enter the following:

  IP address: _____

  Subnet mask: _____

LED Indicators

This section lists the meanings of the LEDs on the Intel Express 9545 router.



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LED	Color	Meaning
Status		
Status	Green, steady	Router is operational.
	Green, blinking	Router is set to factory defaults and is ready for configuration.
	Orange, steady	Diagnostic error; router is operational.
	Orange, blinking	Router is in Recovery Mode.
	Red, steady	Fatal error; router is not operational.
LAN		
LAN (2)	Green, steady	Port is operational; no data activity.
	Green, blinking	Data activity on the LAN.
	Orange, steady	Port is either down or disabled.
	Orange, blinking	Ethernet collisions on the port.
100 Mbps	Green, steady	Ethernet LAN is operating at 100 Mbps.
	Off	Ethernet LAN is operating at 10 Mbps.
ISDN		
Network	Green, steady	Connection to ISDN switch is established.
	Orange, steady	No connection to the ISDN switch; ISDN port is disabled.
	Orange, blinking slow (1 time per second)	Attempting to connect to the ISDN switch.
	Orange, blinking fast (5 times per second)	Maintenance testing (ISDN/U interface only)
	Red, steady	Error, cannot establish connection to the ISDN switch.

LED Indicators

LED	Color	Meaning
Channel 1	Green, steady	ISDN B-channel established, no data activity.
	Green, blinking	Data activity on the ISDN B-channel.
	Orange, steady	No call connected, ISDN B-channel not established.
	Orange, blinking	Trying to connect call and establish the ISDN B-channel.
	Red, steady	Error establishing the ISDN B-channel
Channel 2	Green, steady	ISDN B-channel established, no data activity.
	Green, blinking	Data activity on the ISDN B-channel.
	Orange, steady	No call connected, ISDN B-channel not established.
	Orange, blinking	Trying to connect call and establish the ISDN B-channel.
	Red, steady	Error establishing the ISDN B-channel.
HDSL2		
Line Status	Green, steady	Successful connection to the HDSL2/CSU of the data network switch.
	Orange, steady	Attempting to establish connection to the HDSL2/CSU on the data network switch. Corresponds to a HDSL2/CSU Yellow Alarm.
	Orange, blinking	Testing the line.
	Red, steady	Error, unable to transmit data to the HDSL2/CSU on the data network switch. Corresponds to CSU Red, Blue and out-of-frame alarms.
Network	Green, steady	Connection to the data network switch is established.
	Orange, steady	No connection to the data network switch, HDSL2 port is disabled, or not configured.
	Orange, blinking	Attempting to connect to the data network switch.
	Red, steady	Error connecting to the data network switch.
Connection	Green, steady	WAN connection established; no data activity on the port.
	Green, blinking	Data activity on the port.
	Orange, steady	No call connected; WAN connection not established.
	Orange, blinking	Attempting to establish a WAN connection.
	Red, steady	Error establishing WAN connection.
All LEDs		
All LEDs blinking in a sequence		Router is loading firmware.

Local Management (optional)

Local Management is an on-board, menu-based management interface that supports full monitoring and configuration capabilities. You can use Local Management as an alternative to Intel Device View. For more details on using Local Management, see the user guide.

To Access Local Management through the Console Port

- Use the supplied terminal cable to connect the router console port to a VT100-compatible terminal or the serial port of a PC running terminal emulation software (such as HyperTerminal*). See Table 2 for the correct serial port settings.

- Press ↵Enter to display the Local Management Login screen (see Figure 12).

- Select Administrator and press ↵Enter twice to display the main screen. By default, no password is assigned.

Note If the console port is currently configured for a dial-up modem, you cannot use it for Local Management until configuring the port for a terminal connection. See the user guide for details.

To Access Local Management Remotely using Telnet

- Telnet to the IP address of the router from a terminal on the LAN, or over a WAN connection to the router.

- The router's default IP address is 192.0.2.1 with a subnet mask of 255.255.255.0. A terminal on the LAN must have the same network number as the router. For example, in Figure 13, the terminal on the same LAN as the router has an IP address of 192.0.2.2.

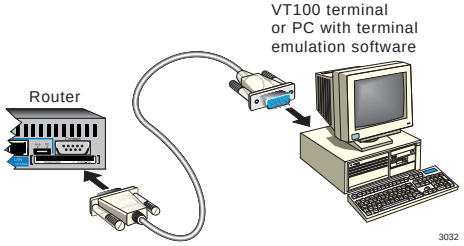

Figure 11. Connect to the Console Port.

Parameter	Setting
Baud	9600
Data bits	8
Parity	None
Stop bits	1
Flow Control	None

Table 2. Serial Port Settings.

Figure 12. Local Management Login Screen. Use the ↑ ↓ keys on your keyboard to select an option and press ↵Enter, or type the underlined letter of the option.

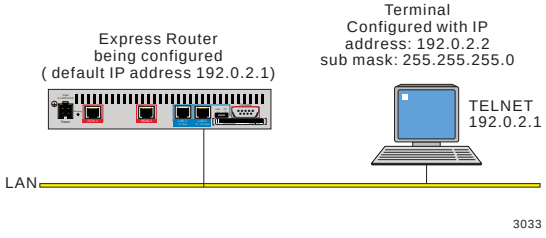

Figure 13. Telnet to Local Management. A terminal on the LAN must be on the same subnet as the router.

Viewing Online Manuals

You can view and download user manuals and product documentation from the Intel Device View CD-ROM and from the Intel Support Web site. To view the manuals, your PC must have Adobe Acrobat* Reader version 3.0 or higher. The Intel Device View CD-ROM contains a copy of Acrobat* Reader version 4.05 and Internet Explorer* 5.01 that you can install.

Manuals on the Intel Device View CD

The following manuals are located in the **Manuals** directory.

Manual Title	File name
Intel Express 951x, 952x,and 9545 Routers User Guide	951x_952x_9545 Router User Guide.pdf
Intel Express Router - Reference Manual	ER_Ref.pdf
Intel Express 9545 Router - Quick Start (this guide)	9545 Router Quick Start.pdf

Table 3. Online manuals available on the Intel Device View CD-ROM

Documentation on the Intel Support Web site

For the latest version of user manuals and other product literature, see the Intel Support Web site at:

http://support.intel.com

Search for the Express 9545 router and look for a link to manuals and literature. If you do not have an appropriate Web browser, see the instructions below for installing Internet Explorer version 5.01.

To Install Acrobat Reader

1. Insert the Intel Device View CD-ROM in your computer's CD-ROM drive.
2. From the Intel Device View installation screen, click **Install Add-ons**.
3. Select **Acrobat Reader 4.05** and click Ok. Follow the on-screen instructions to complete the installation.

To Install Internet Explorer

1. Insert the Intel Device View CD-ROM in your computer's CD-ROM drive.
2. From the Intel Device View installation screen, click **Install Add-ons**.
3. Select **Internet Explorer v5.01** and click Ok. Follow the on-screen instructions to complete the installation.

Regulatory Information

Statutory Notices & Warnings

Important!

The Intel Express Router must be installed by authorized technical personnel. It must be handled with great care at all times, and must not be exposed to violent shock or any other influences that may result in damage and possible functionality failures. Intel cannot be held responsible for any damage arising as a result of incorrect handling or installation.

EMC caution

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Use of shielded cables

To comply with EMC and FCC emission limits, use the shielded cables recommended by Intel Corporation. Use unshielded cables only where explicitly allowed in the installation manual of the product in question.

Power supply wiring color code

The wires in the power supply cable provided with this equipment are color coded as follows:

Color	Connection
Green and yellow	Ground (Earth)
Blue	Neutral
Brown	Live

FCC Statements

FCC part 15 warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operating in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC part 68 notice

This equipment complies with Part 68 of the FCC rules. Located on the equipment is a label that contains, among other information, the FCC registration number. If requested, this information must be provided to the telephone company.
This equipment cannot be used on the telephone company-provided coin service. Connection to Party Line Service is subject to State Tariffs.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
The telephone company may make changes in its facilities, equipment, operations and procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact:

Intel Corporation—Jones Farm
2111 N.E. 25th Avenue
Hillsboro, Oregon 97124-5916
Telephone 503-696-8080

If the trouble is causing harm to the telephone network, the telephone company may request you to remove the equipment from the network until the problem is resolved.

It is recommended that the customer install an AC surge arrester in the AC outlet to which this device is connected. This is to avoid damaging the equipment caused by local lightening strikes and other electrical surges.

Regulatory Information

This equipment uses the following USOC jacks and codes:

Interface	Facility Interface Code	Service Order Code	Jack Type
ISDN BRI ST	02IS5	6.0N	NA
ISDN BRI ST	02IS5	6.0N	RJ49C

Industry Canada Notice

IC CS-03 NOTICE (Canada)

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or electrical malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution
Users should not attempt to make such electrical connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

The standard connecting arrangements (telephone jack type) for this equipment are CA-A11 and CB-1D.

Approvals

The Express Router complies with the following requirements:

Safety	UL 1950 CSA-C22.2 No. 950 IEC950 EN 60950
Telecommunications	FCC part 68 IC CS-03
Emission	FCC part 15 Class A, EN 55022 Class A CISPR 22 Class A
Susceptibility	EN 55024 CISPR 24
CE Mark	No